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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,470	03/10/2005	Masaru Mitsui	122672	3658

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EXAMINER	
MCDONALD, RODNEY GLENN	
ART UNIT	PAPER NUMBER
1795	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,470	MITSUI, MASARU	
	Examiner	Art Unit	
	Rodney G. McDonald	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2-17-09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7-9, 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. (U.S. Pat. 5,942,356) in view of Watanabe et al. (Japan 2001-303243).

Regarding claim 1, Mitsui teach a method for manufacturing a mask blank having a thin film for forming a mask pattern on a substrate. The thin film is formed by a sputtering method using a target containing silicon. The sputtering is done by reactive sputtering. (Column 1 lines 5-15; Column 3 lines 7-28; Column 3 lines 45-53; Column 7 lines 25-36)

Regarding claim 3, Mitsui teach the thin film formed by a reactive sputtering method in an atmosphere of nitrogen. (Column 7 lines 25-36)

Regarding claim 4, Mitsui teach the sputtering target contains silicon of 70 to 95 mol%. (Column 3 lines 45-53; Column 6 lines 60-61)

Regarding claim 5, Mitsui teach the thin film is a light semi-transmitting film and the mask blank is a phase shift mask blank. (See Abstract; Column 4 lines 35-38)

Regarding claim 7, Mitsui et al. teach patterning the thin film of the mask blank. (Column 9 lines 21-30)

Regarding claim 8, Mitsui et al. teach a sputtering target for manufacturing a mask blank by a reactive sputtering method the sputtering target comprising metal and silicon wherein the silicon is from more than 80 mol% to 95 mol% of the sputtering target. (Column 1 lines 5-15; Column 3 lines 7-28; Column 3 lines 45-53; Column 6 lines 60-61; Column 7 lines 25-36)

Regarding claim 11, Mitsui et al. teach a method for manufacturing a phase shift mask blank by sputtering in an atmosphere containing nitrogen using a target containing metal and silicon to deposit a light semi-transmitting film containing metal, silicon, and nitrogen on a transparent substrate. (Column 1 lines 5-15; Column 3 lines 7-28; Column 3 lines 45-53; Column 7 lines 25-36)

Regarding claims 12, 13, 14, Mitsui et al. teach the target contains 70 to 95 mol%. (Column 6 lines 60-61)

Regarding claim 19, Mitsui et al. teach the light semi-transmitting film has a transmittance of 9% to 20% for an exposure wavelength. (Column 5 lines 15-19)

The differences between Mitsui et al. and the present claims is that the hardness of the sputtering target is not discussed (Claims 1, 2, 11), the sputtering target having a hardness of 900 HV or more in Vickers hardness (Claim 8), the sputtering target comprising a metal silicide is not discussed (Claim 9), utilizing a target with a hardness that will reduce defects in the deposited film is not discussed (claim 11) and sintering metal silicide and silicon powders to form the sputtering target is not discussed (Claim 15).

Regarding claims 1, 2, 11, Watanabe et al. teach utilizing a metal silicide target with a Vickers hardness of 1300 or less to produce films without defects because generation of particles are suppressed from the target. (See Abstract)

Regarding claim 8, Watanabe et al. teach utilizing a metal silicide target with a Vickers hardness of 1300 or less to produce films without defects because generation of particles are suppressed from the target. (See Abstract)

Regarding claim 9, Watanabe et al. teach utilizing a metal silicide target. (See Abstract)

Regarding claim 11, Watanabe et al. teach utilizing a metal silicide target with a Vickers hardness of 1300 or less to produce films without defects because generation of particles are suppressed from the target. (See Abstract)

Regarding claim 15, Watanabe et al. teach metal silicide with silicon. (Machine translation 0047)

The motivation for utilizing the features of Watanabe et al. is that it prevents particle generation from the target which produces defects in the deposited films. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Mitsui et al. by utilizing the features of Watanabe et al. because it allows preventing defects in films.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. in view of Watanabe et al. as applied to claim 1 above, and further in view of Okubo (Japan 07-128840).

The difference not yet discussed is the use of a metal film formed on the thin film. (Claim 6)

Regarding claim 6, Okubo teach a metal film formed on a thin film. (Machine Translation Paragraph 0051)

The motivation for utilizing the features of Okubo is that it allows for preventing leakage of exposing light. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Okubo because it allows for preventing leakage of exposing light.

Claim 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. in view of Watanabe et al. as applied to claim 1 above, and further in view of Okubo et al. (U.S. Pat. 5,935,735).

The differences not yet discussed is the thin film is cleaned. (Claims 17, 18)

Regarding claims 17, 18, Okubo et al. teach cleaning a phase shift blank. (Colum 10 lines 66)

The motivation for utilizing the features of Okubo et al. is that it allows for cleaning. (Column 3 lines 33)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Okubo et al. because it allows for cleaning.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. in view of Watanabe et al. as applied to claim 1, 15 above, and further in view of Chiba et al. (U.S. Pat. 4,938,798).

The difference not yet discussed is sintering at a temperature of 1300 degrees C or less is not discussed. (Claim 16)

Regarding claim 16, Chiba et al. teach sintering at a temperature of 1,100 to 1,200 degrees C. (Column 4 lines 3-14)

The motivation for utilizing the features of Chiba et al. is that it allows for achieving a high density target. (Column 4 lines 3-14)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Chiba et al. because it allows for achieving a high target density.

Response to Arguments

Applicant's arguments filed April 20, 2009 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to the argument that Watanabe does not teach utilizing reactive sputtering, it is argued that Mitsui teach reactive sputtering and that one of ordinary skill in the art would reactively sputter targets to produce phase shift mask blanks. (See Mitsui discussed above)

In response to the argument that Watanabe does not teach manufacturing mask blanks and masks for photolithography, it is argued that Mitsui the primary reference suggests forming mask blanks and masks for photolithography. (See Mitsui discussed above)

In response to the argument that a means for reducing defects in an inert atmosphere would not have predictably reduced defects in a reactive atmosphere, it is argued that since Watanabe recognize particular features for a target for reducing defects during sputtering one of ordinary skill in the art would readily envisage such a result when reactive sputtering. (See Watanabe discussed above)

In response to the argument that Watanabe teach away from the claimed invention, it is argued that since Watanabe teach a sputtering target to have a hardness that overlaps the claimed range Watanabe does not teach away from the claimed subject matter. (See Watanabe discussed above)

In response to the argument that Mitsui and Watanabe fail to teach the claimed correlation, it is argued that since Mitsui and Watanabe teach the features of the target

which are the same features claimed by Applicant then the correlation would necessarily exist. (See Mitsui and Watanabe discussed above)

In response to the argument that Watanabe does not teach a target having a silicon content of more than 80 mol% to 95% of the sputtering target, it is argued that Mitsui teach the target to have a silicon content of more than 80 mol% to 95 mol %. (See Mitsui discussed above)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
April 20, 2009